

Learning Progression

SEISMIC

Grade level: 3-8 PD

Prerequisite skill: Teachers likely have extensive experience with computation with whole numbers, grades K-5, using multiple methods.

Learning Target:

In a multi-digit whole number, a digit in one place represents n times what it represents in the place to its right, where n is the base number. (4.NBT.1)

Success Criteria:

I can explain the value of a digit in a number in relation to other digits in the number in both base six and base ten.

Formative Assessment:

Place a value (1 billion) on a number line (1 to 1 trillion). Explain its placement with place value concepts. "I used to think.... Now I think...."

Learning Target:

Addition and subtraction of multi-digit numbers can be performed in multiple ways by utilizing properties of addition and place value.

Success Criteria:

I can add multi-digit numbers in multiple ways, and explain how each process relates to properties of the operations and place value.

Formative Assessment:

Demonstration of multiple ways to add multi-digit numbers, with accurate explanation of how this relates to place value and draws upon properties of the operations.

Learning Target:

Multiplication of values by powers of ten results in a corresponding addition of zeroes to the end of the original number.

Success Criteria:

I can identify what happens when numbers are multiplied by another number ending in one or more zeroes, and explain why this works.

Formative Assessment:

Peer Assessment: Explanation of why zeroes are added when a number is multiplied by a multiple of a power of ten.

Learning Target:

Multiplication of multi-digit numbers can be performed in multiple ways by utilizing properties of multiplication and place value structures of number systems.

Success Criteria:

I can multiply multi-digit numbers in at least two different ways, and explain how each process relates to properties of the operations and place value.

Formative Assessment:

Demonstration in groups of how at least one multiplication strategy makes sense according to properties of multiplication and place value, as well as an appropriate model for the multiplication problem.

Learning Target:

Division of multi-digit numbers can be performed in multiple ways by utilizing properties of operations and place value structures of number systems.

Success Criteria:

I can demonstrate at least three different ways to solve a division problem, explain how these ways connect to place value, and explain how each strategy relates to the context of the problem.

Formative Assessment:

Exit slip solution of partitive and measurement division problems, explaining how each strategy works and relates to the context of the problem.

Big Idea:
Operations in our number system are built on properties of the operations and the place value, base 10 structure of our number system.

Later math concepts that build on this big idea include:

- Computation with decimals
- Proportional reasoning